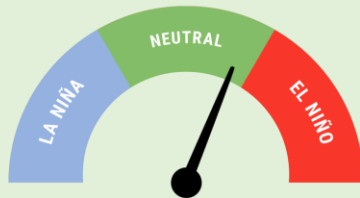


Island Climate Update



ENSO Watch
August 2023

Recent



ENSO-neutral

El Niño Alert criteria remained in place during July. The ocean-atmosphere system is expected to move into El Niño conditions during August or September.

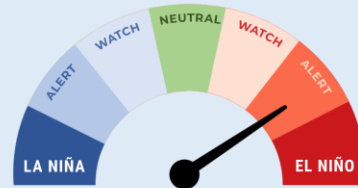
The Southern Oscillation Index (SOI) was -0.5 in July, on the El Niño side of neutral.

Tropical Pacific sea surface temperatures (SSTs) remained above El Niño thresholds during July.

95% chance for **El Niño** conditions to develop sometime during **August-October 2023**

Chance for **El Niño** conditions persisting during **November 2023-January 2024**

90%



El Niño Alert

Forecast

ENSO situation summary

The monthly NINO3.4 Index anomaly (in the central equatorial Pacific) at the end of July was +1.11°C. At the same point during the developmental phase of strong past El Niño events, it was +1.35°C in 2015, +1.31°C in 1997, and +0.26°C in 1982.

The SOI was on the El Niño side of neutral (-0.5) during July. Although ocean temperatures are suggestive of El Niño, the atmosphere has yet to demonstrate a consistent, El Niño-like response to those warming seas.

Trade wind strength was above normal in the east-central equatorial Pacific during July. A strong trend toward reduced trade winds is forecast in early August. A second reduction in trades is likely in the middle part of August. This is expected to lead to warmer seas in the central equatorial Pacific.

In the sub-surface equatorial Pacific, significant anomalies of +5°C to +7°C were occurring around 50 m depth in the eastern part of the basin as of late July. The most unusually warm waters were consolidating in the eastern Pacific Ocean, consistent with the development of a classic east-west propagation of ocean temperature anomalies (canonical) El Niño event.

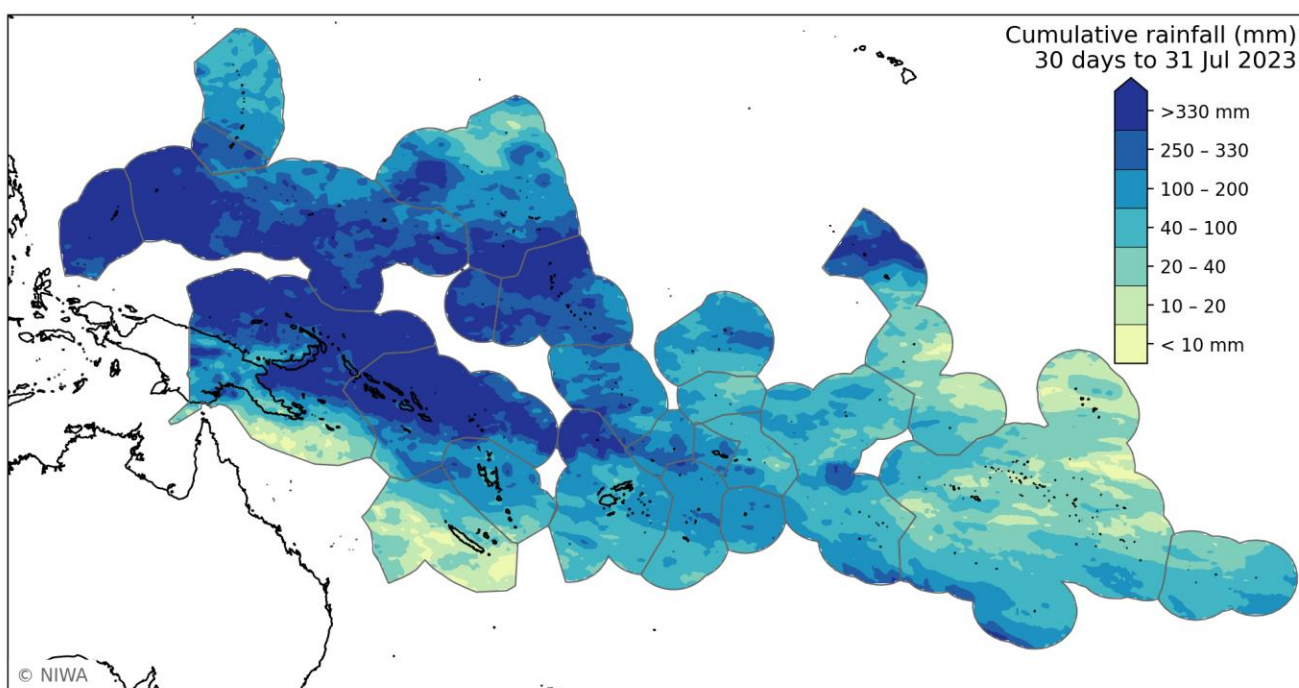
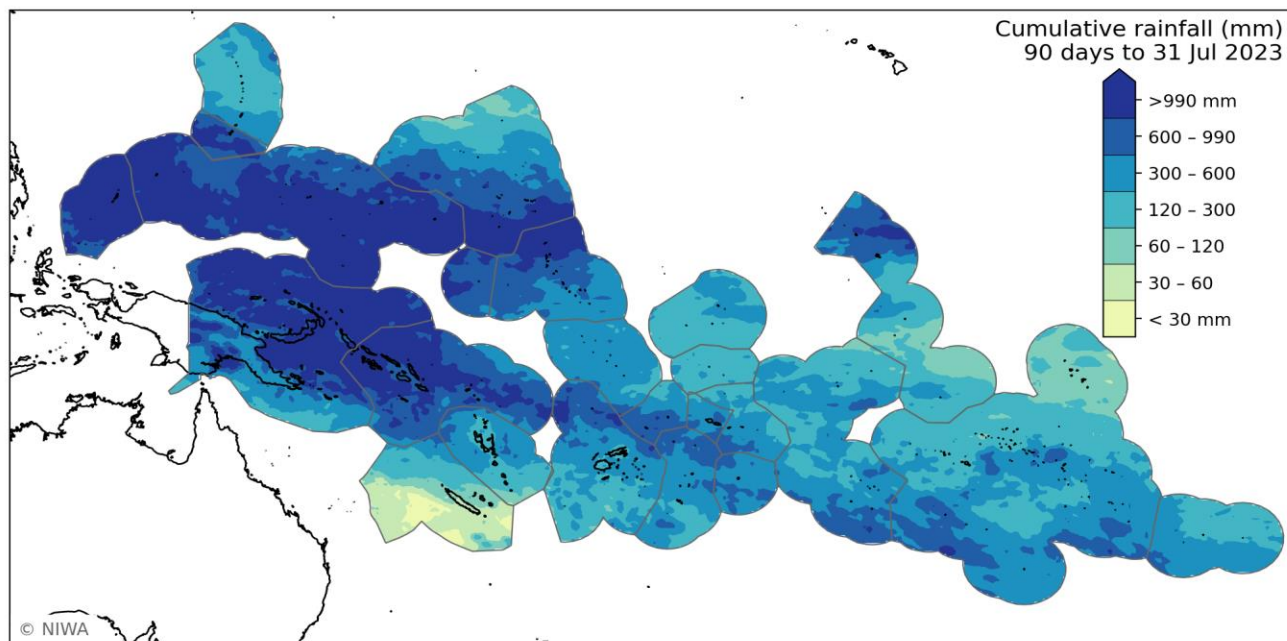
NIWA's analysis indicates that oceanic indicators have reached El Niño thresholds, but atmospheric indicators remain neutral. Because El Niño is a coupled ocean-atmosphere phenomenon, the ocean and the atmosphere need to be working in tandem before an event is classified. NIWA is now at El Niño Alert with an event likely to begin during August or September. Overall, El Niño has a 95% chance of developing during August-October and a 90% chance of continuing through December-February.

Regional situation summary (31 July 2023)

Satellite-derived rainfall summaries for the last month and three months are shown below.

During May-July (top plot), parts of New Caledonia received less than 60 mm of rain. Over 990 mm fell across parts of Guam, Palau, Federated States of Micronesia (FSM), southern Marshall Islands, northern Gilbert Islands, northern Papua New Guinea (PNG), and the Solomon Islands.

During July (bottom plot), less than 40 mm of rain fell in parts of the Northern Marshall Islands, southern PNG, New Caledonia, central Line Islands, Marquesas, Society Islands, and Tuamotu Archipelago. Over 330 mm fell across Palau, FSM, southern Marshall Islands, Gilbert Islands, northern PNG, Solomon Islands, northern Fiji, and the northern Line Islands.

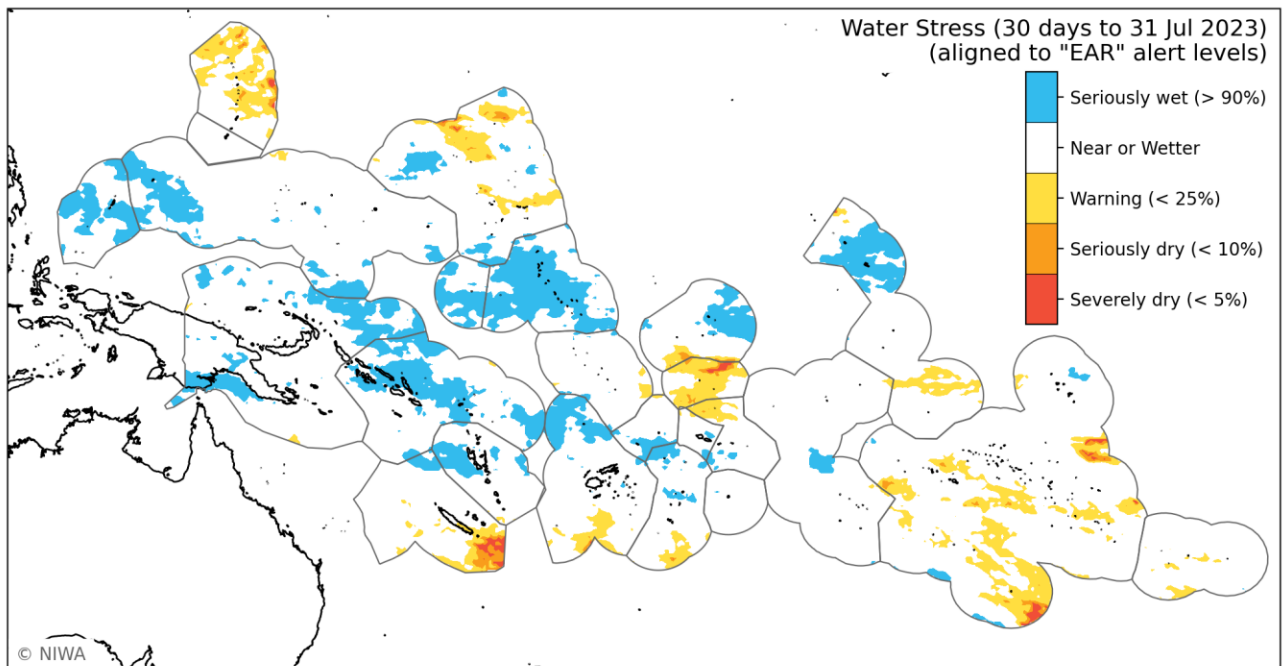
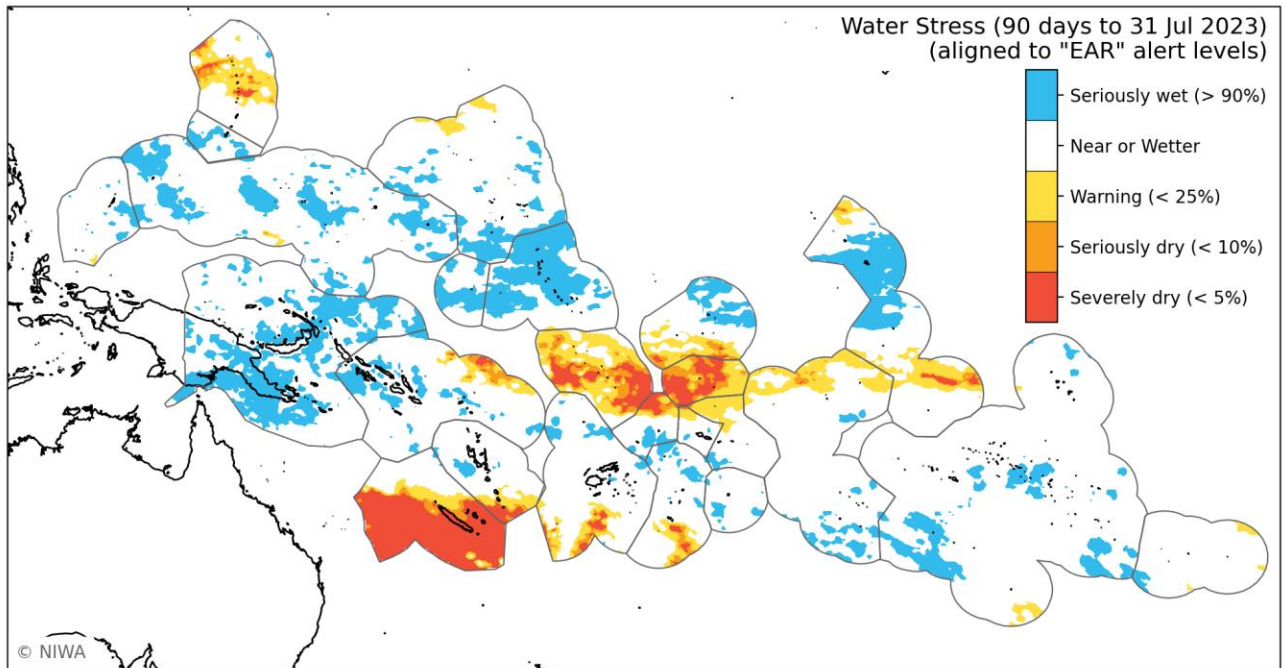


EAR regional situation summary (31 July 2023)

The regional thresholds for cumulative rainfall over the last 90 and 30 days are shown in the plots below.

During May-July (top plot), severely or seriously dry conditions affected parts of the Northern Marianas, New Caledonia, southern Vanuatu, Tuvalu, and Tokelau.

During July (bottom plot), severely or seriously dry conditions affected parts of the Northern Marianas, northern Marshall Islands, eastern New Caledonia, and Tokelau.

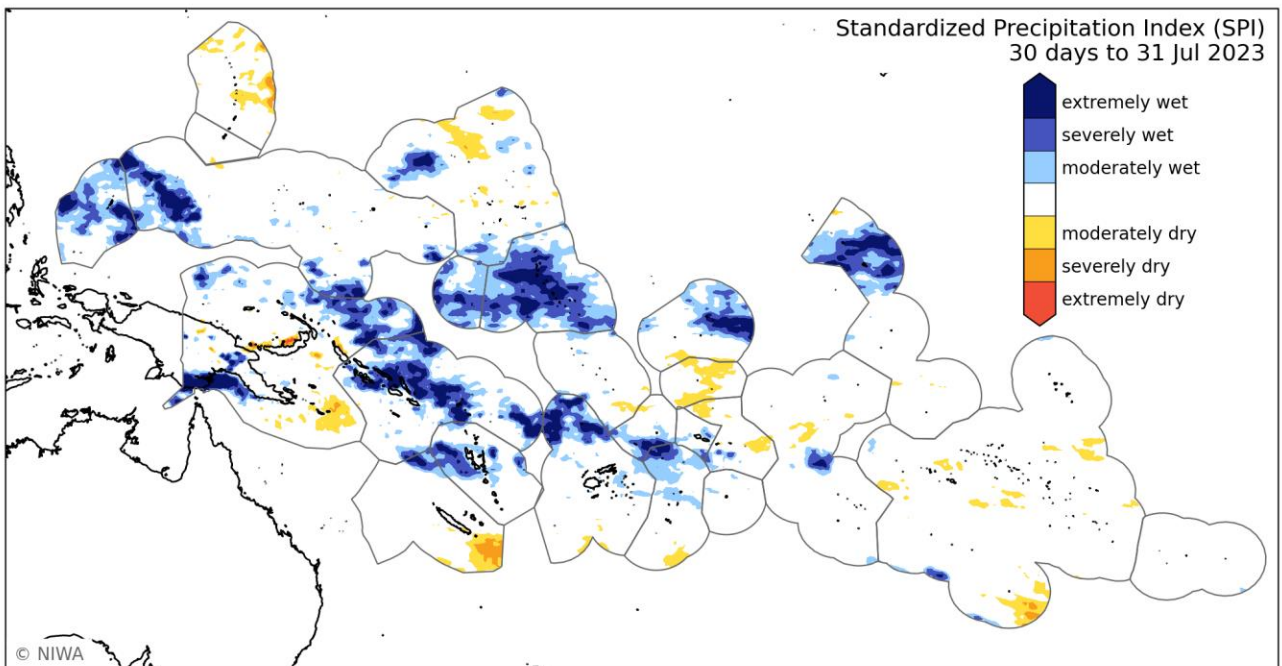
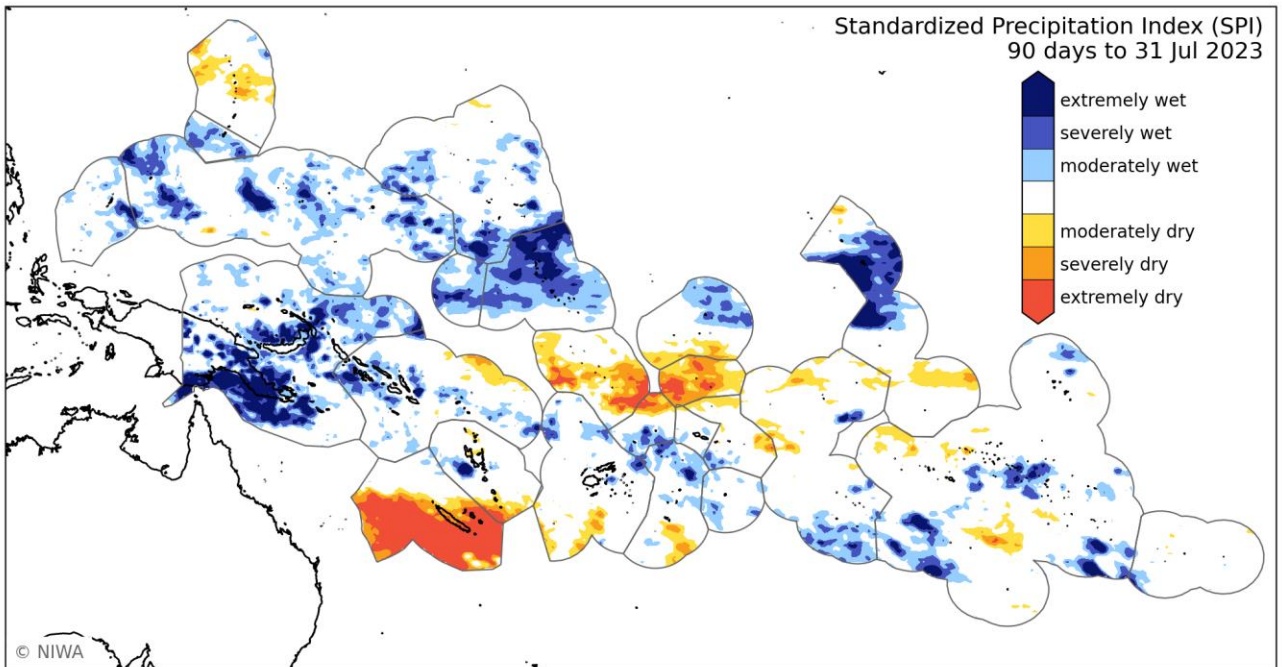


SPI Regional situation summary (31 July 2023)

The Standardized Precipitation Index (SPI) thresholds for cumulative rainfall over the last 90 and 30 days are shown in the plots below.

During May-July (top plot), extremely or severely dry conditions occurred in parts of the Northern Marianas, New Caledonia, southern Vanuatu, Tuvalu, and Tokelau.

During July (bottom plot), extremely or severely dry conditions occurred in isolated parts of eastern PNG.

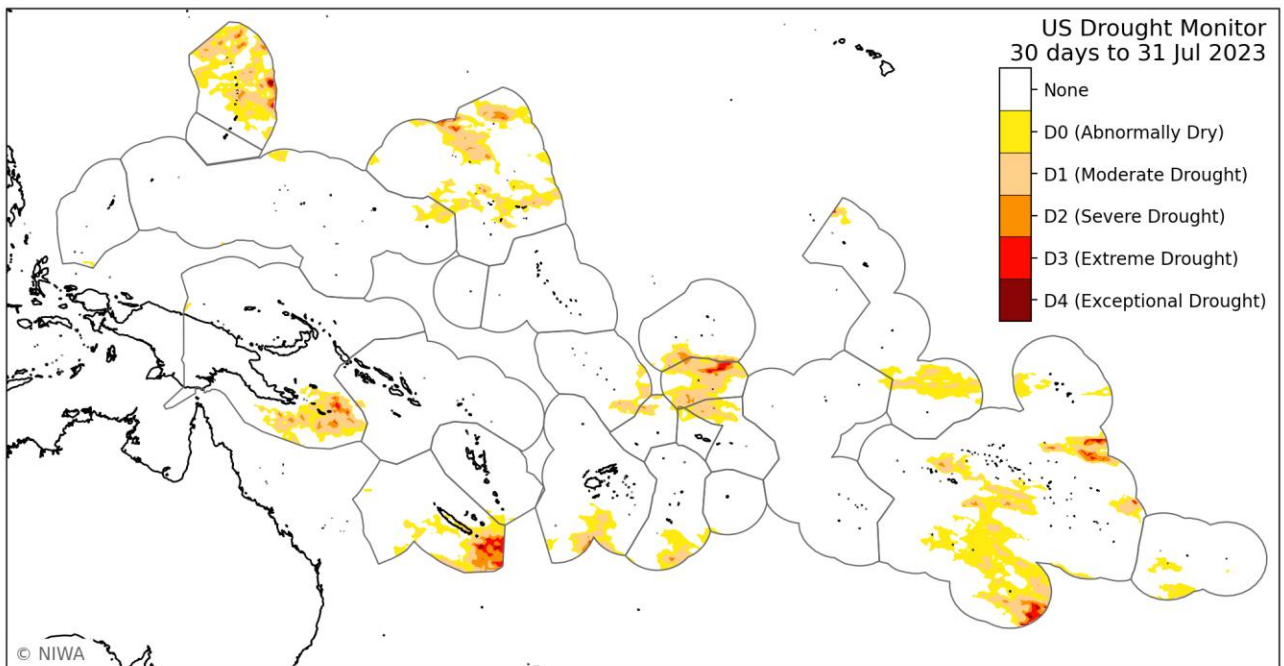
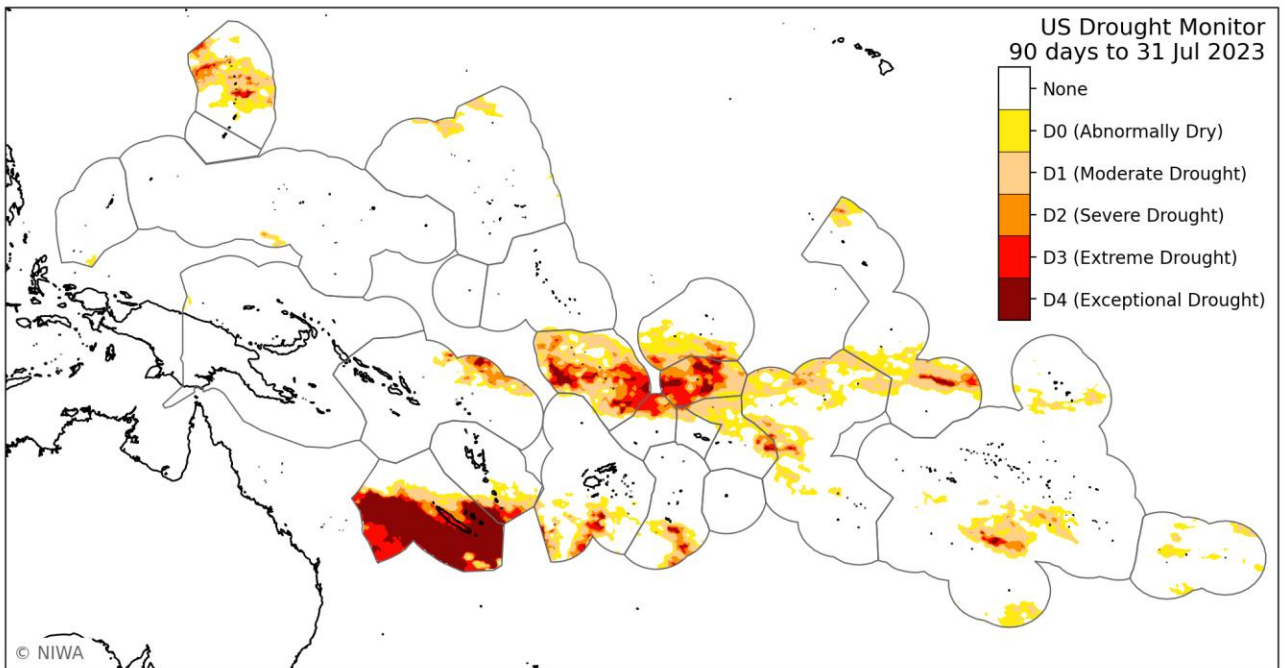


USDM Regional situation summary (31 July 2023)

The US Drought Monitor Index (USDM) levels for cumulative rainfall over the last 90 and 30 days are shown in the plots below.

During May-July (top plot), extreme or exceptional drought occurred in parts of the Northern Marianas, New Caledonia, southern Vanuatu, Tuvalu, and Tokelau.

During July (bottom plot), extreme or exceptional drought occurred in parts of the Northern Marianas, northern Marshall Islands, eastern PNG, eastern New Caledonia, and Tokelau.

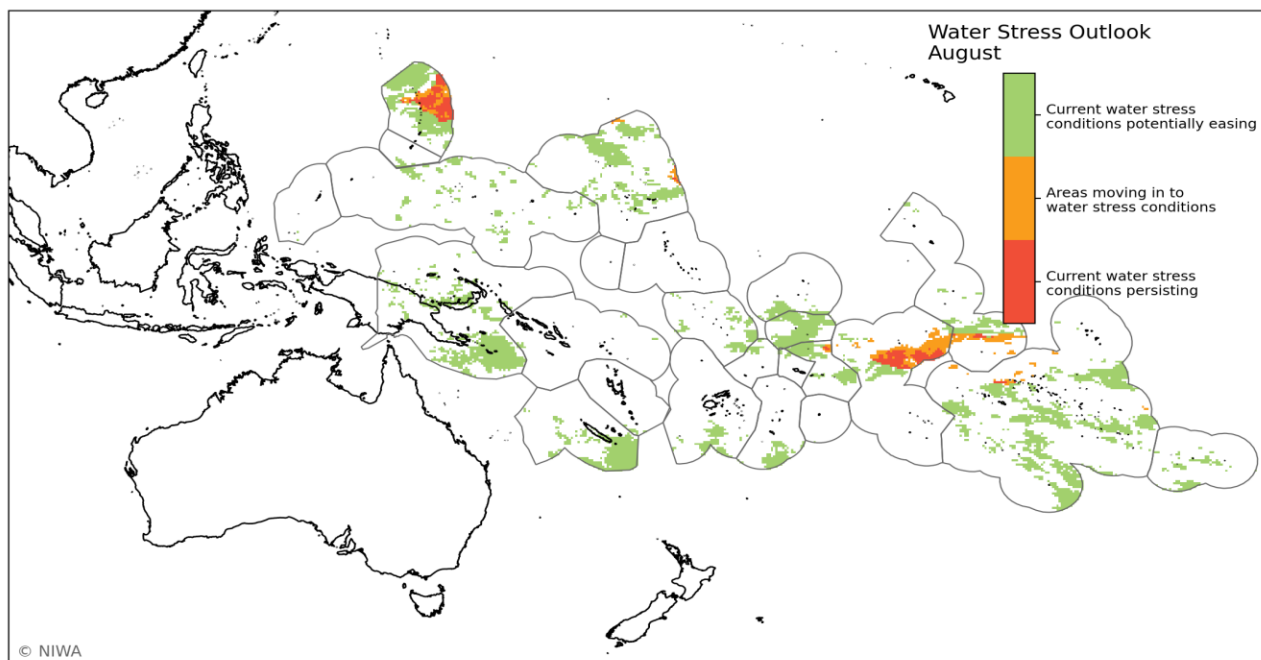
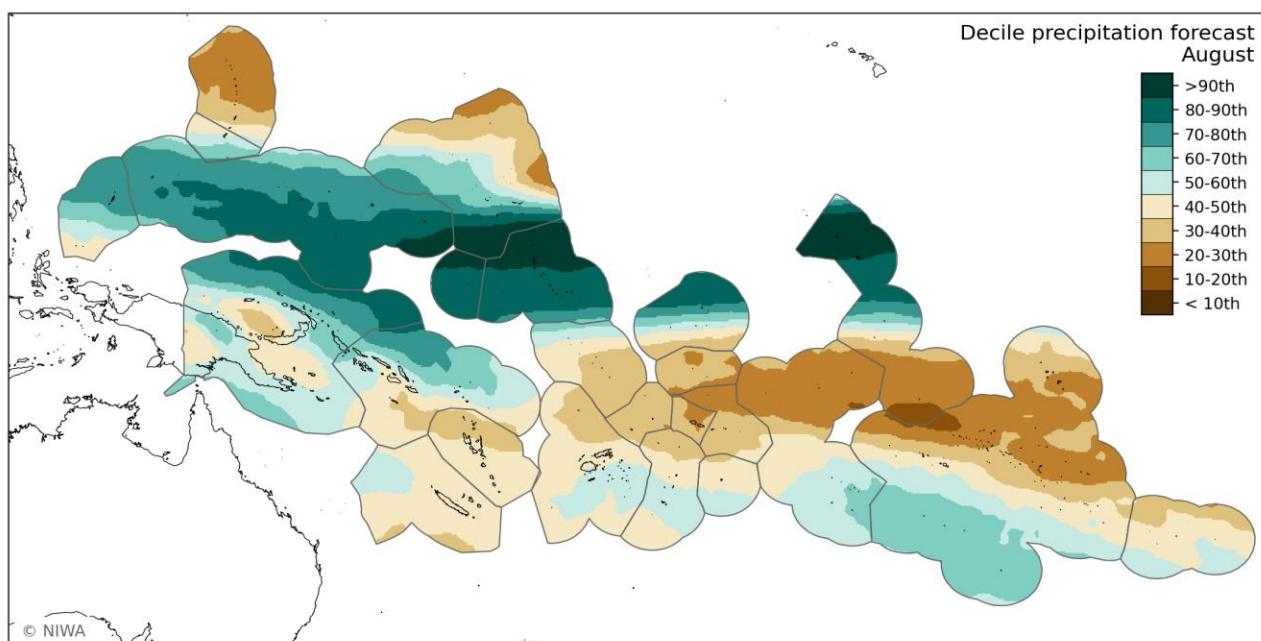


August 2023 forecast summary

During August, rainfall is shown to be below normal or well below normal in the Northern Marianas, northern Marshalls, parts of PNG and the Solomons, Vanuatu, New Caledonia, Fiji, Tuvalu, Tokelau, Wallis & Futuna, Samoa, American Samoa, Tonga, Niue, Northern Cook Islands, Society Islands, Marquesas, Tuamotu Archipelago, and Pitcairn Islands.

On the other hand, very wet conditions are shown for Palau, FSM, southern Marshall Islands, northern PNG, northern Solomon Islands, Nauru, and Kiribati (Gilbert, Phoenix, and northern Line Islands).

Water stress conditions may persist or develop in the Northern Marianas, Northern Cook Islands, and a small portion of the northern Tuamotu Archipelago.

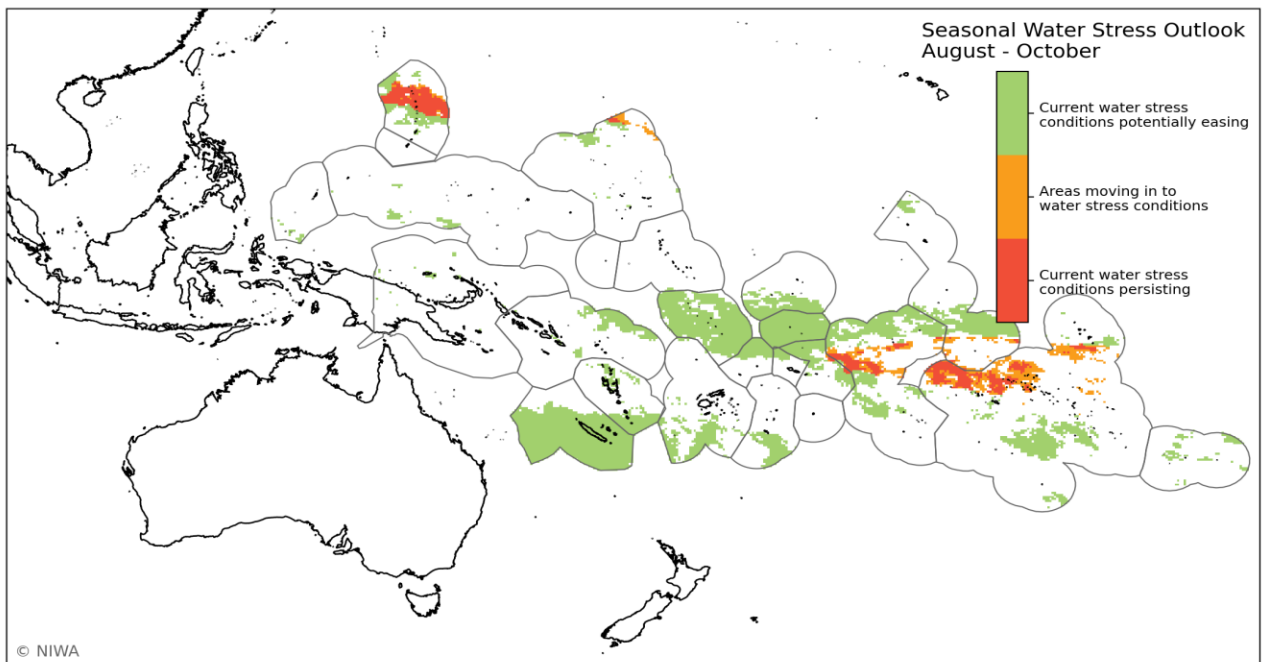
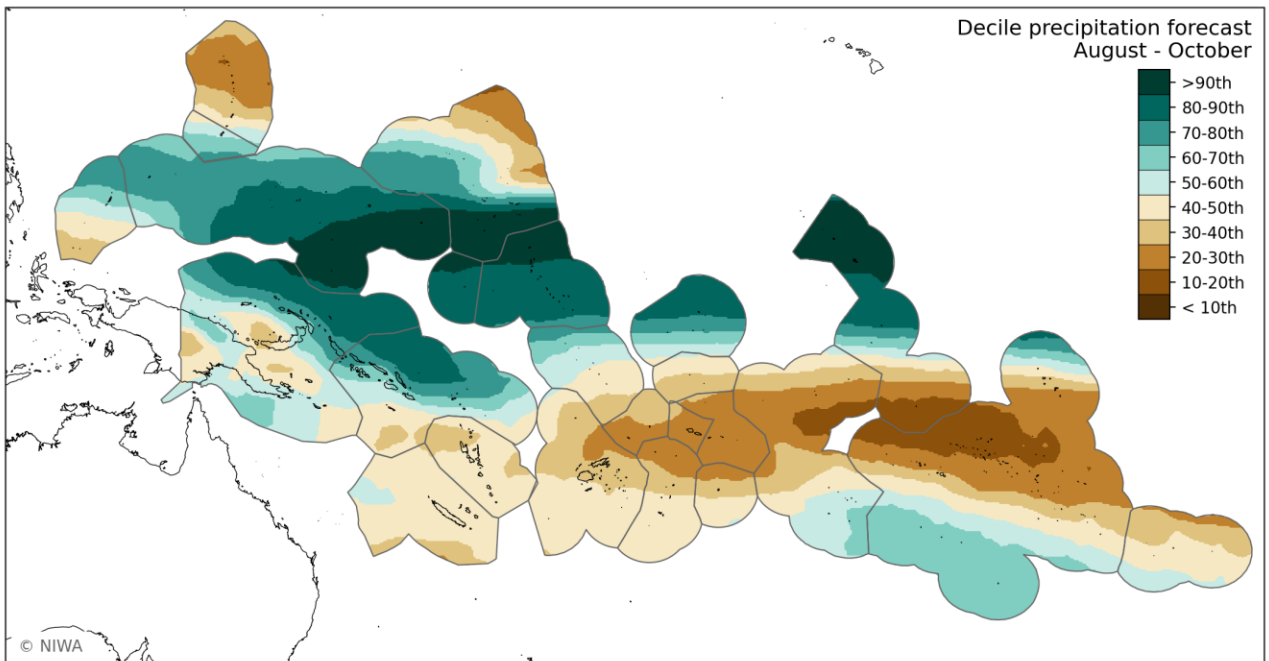


August-October 2023 forecast summary

During August-October, below normal or well below normal rainfall is signaled for the Northern Marianas, northern Marshalls, parts of PNG and the southern Solomons, Vanuatu, New Caledonia, Fiji, southern Tuvalu, Tokelau, Wallis & Futuna, Samoa, American Samoa, Tonga, Niue, Northern Cook Islands, Society Islands, Marquesas, Tuamotu Archipelago, and Pitcairn Islands.

Rainfall is predicted to be well above normal across FSM, southern Marshall Islands, northern PNG, Solomon Islands, Nauru, northern Tuvalu, and Kiribati (Gilbert, Phoenix, and northern Line Islands).

Water stress conditions may persist or develop in the Northern Marianas, Northern Cook Islands, Society Islands, and northern Tuamotu Archipelago.

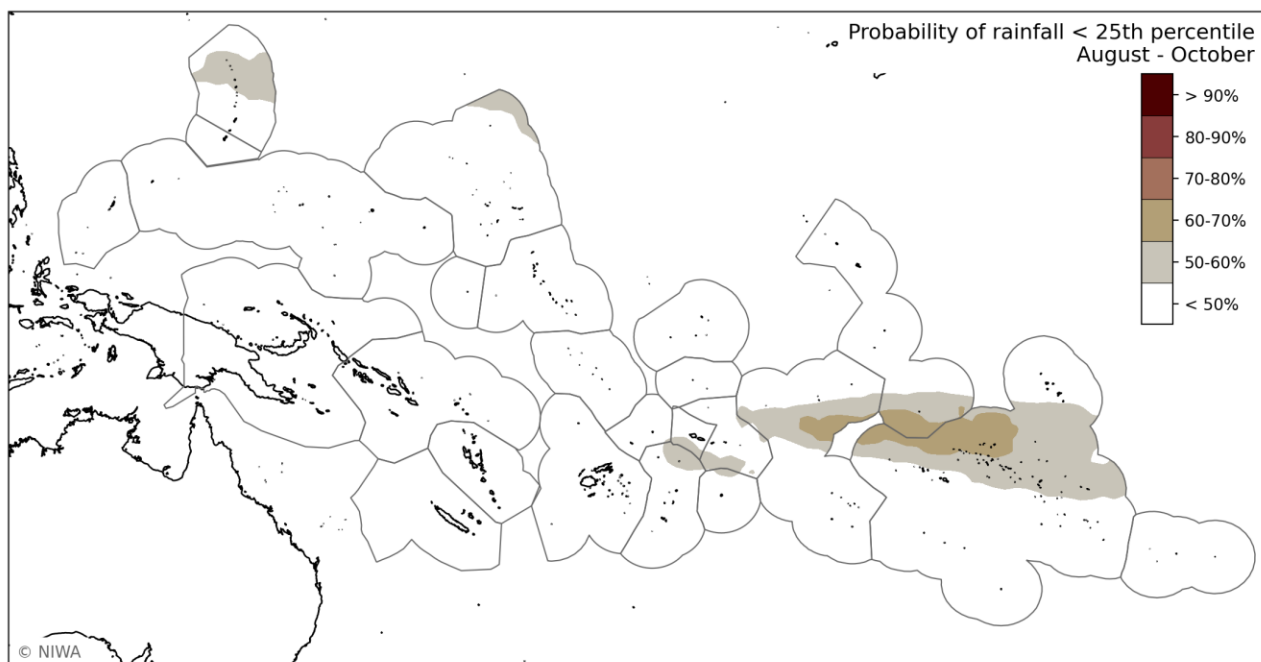
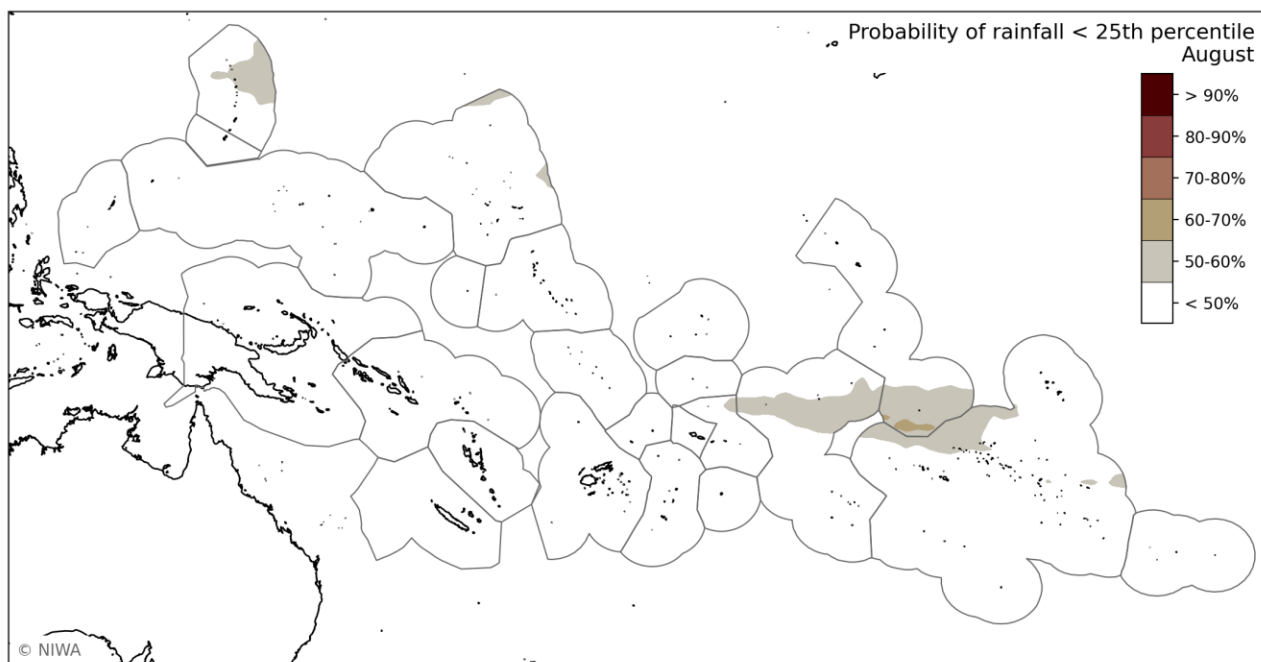


Probabilities of rainfall < 25th percentile

The probability (likelihood) of dry conditions with cumulative rainfall being less than the 25th percentile for August (top plot) and for the season (August-October, bottom plot) are shown.

For August, the highest chances for very dry conditions are confined to small areas in the Northern Marianas, Northern Cook Islands, and the northern Tuamotu archipelago.

For August-October, very dry conditions may affect parts of the Northern Marianas, northern Tonga, Northern Cook Islands, and the Tuamotu Archipelago.



Island Climate Update



About

Understanding the Island Climate Update bulletin

The ICU utilises satellite rainfall data from the [NASA GPM-IMERG](#) and a multi-model ensemble forecast utilising 550+ members derived from nine Global Climate Models available from the [Copernicus Climate Data Store](#).

Bulletin page	Description
Rainfall watch	Rainfall plots are derived from NASA GPM-IMERG satellite rainfall data. Regional rainfall accumulation is shown for the last 30 days (1 month) and 90 days (3 months).
Water stress watch	Plots are derived from NASA GPM-IMERG satellite rainfall data. Different Pacific Island Meteorological Services use different approaches to defining drought and water stress. Hence current regional water stress classifications are shown for the Early Action Rainfall (Page 3), Standard Precipitation Index (Page 4) and US Drought Monitoring (Page 5) alert levels for the last 90 and 30 days of a accumulated rainfall.
Water stress outlook	<p>Outlook water stress classifications are based on both the satellite rainfall data and a multi-model ensemble forecast derived from nine Global Climate Models for the next month and three months.</p> <p>The top plots on each page show the rainfall decile band for the next 1 and 3 months for which the cumulative probability derived from the multi-model ensemble forecasts reaches 50%.</p> <p>The bottom plots bring together conditions over the past 3 months and forecast conditions over the next month:</p> <ul style="list-style-type: none"> • Current water stress conditions potentially easing: Past 3 month accumulation less than 25th percentile. 1 month / seasonal accumulation forecast greater than 25th percentile. • Areas moving in to water stress: Past 3 month accumulation between the 40th and 25th percentile. 1 month / seasonal accumulation forecast less than 25th percentile. • Current water stress conditions persisting: Past 3 month accumulation less than 25th percentile. 1 month / seasonal accumulation forecast less than 25th percentile. <p>The final page shows the probability that forecast rainfall over the next 1 or 3 months is within the lowest 25% of cumulative rainfall over the same period (a measure of the confidence in a low rainfall forecast).</p>



Additional regional and country-level resources are available online:

- Daily updated plots for 30, 60, 90, 180 and 365 day: a cumulative rainfall, number of dry days, number of days since last rainfall > 1 mm, EAR, SPI and USDM indices. [Click here for the imagery and here for the underlying data.](#)
- A range of probabilistic one to five monthly and seasonal forecast plots updated shortly after the 15th of each month. Imagery and data to be made available soon.



NIWA is the Network co-lead for the [WMO RAV Regional Climate Centre Node](#) on Long Range Forecast and consortium member for nodes on Climate Monitoring, Operational Data Services and Training.

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